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EXAMINER	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/052,552	PARK ET AL.	
	Examiner	Art Unit	
	Tung Vo	2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 11 July 2007.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1,2,4,5,7,9,11,13-17 and 19-26 is/are pending in the application.

4a) Of the above claim(s) 3,6,8,12 and 18 is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1,2,4,5,7,9,11,13-17 and 19-26 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 23 January 2002 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1 and 26 are rejected under 35 U.S.C. 102(b) as being anticipated by Kim (US 6,912,351) in view of Chiang et al. (US 6,192,081 B1).

Re claims 1 and 26, Kim discloses a multi-channel image encoding apparatus (fig. 2) for selectively receiving image signals transmitted through a plurality of input channels (Cameras 1-cameras n, selection 80 of fig. 2) and encoding (110 of fig. 2) the image signals, comprising:

a channel data processor (the combination of 80, 90, 100, 110 of fig. 2) comprising a frame buffer group (100 of fig. 2) including a plurality of frame buffers (memories for storing I, B, P pictures or frames of each input signal) for each input channel in order to receive a plurality of frame data (I, B, P frame data) through the plurality of input channels and to store the plurality of frame data, the channel data processor (S03 of fig. 3) for selecting data transmitted to the frame buffer group to output the selected data, the channel data processor (100 of fig. 2) storing each unit of the frame data into the frame buffer group corresponding to each channel in accordance with a set-up input channel selection order (I, B, P order); and

an encoder (110 of fig. 2) for encoding image signals output from the channel data processor with a Moving Picture Experts Group method;

a first multi-switch unit (80 of fig. 1) selectively contacting each one of the input channels with the plurality of frame buffers of the frame buffer group corresponding to each one of the input channels, each one of the input channels corresponding to a specific and exclusive plurality of frame buffers in the frame buffer group; and

a second multi-switch unit (S03 of fig. 3, read out I, B, P order to the encoder would be considered as a second multi-switch unit for encoding) for selectively contacting with each one of the plurality of frame buffers (I, B, P memories) of the frame buffer group (100 of fig. 2; col. 3, lines 29-32) corresponding to each one of the input channels, and outputting data output from the plurality of frame buffers of the frame buffer group corresponding to each one the input channels, to the encoder (110 of fig. 2).

Kim further teaches the encoder (110 of fig. 2) is MPEG encoder that comprises a discrete cosine transformation (DCT), quantizer (Q), variable length encoder (VLC), and buffer (BUF) as parser.

Chiang teaches the MPEG encoder comprising a discrete cosine transformer (160 of fig. 1) for performing a discrete cosine transform with respect to the image signals inputted from the; a quantizer (170 of fig. 1) for quantizing signals outputted from the discrete cosine transformer and outputting the quantized signals a variable length encoder (180 of fig. 1) for performing variable length encoding with respect to signals outputted from the quantizer, and outputting the encoded signals; and a parser (180 of fig. 1) for loading channel information about each frame to signals outputted from the variable length encoder, and outputting the signals.

Therefore, taking the teachings of Kim and Chiang as a whole, it would have been obvious to one of ordinary skill in the art to incorporate the teaching elements in the MPEG

encoder of Chiang to modify the encoder (110 of fig. 1) of Kim for improving the efficiency of the prediction of sample values.

3. Claims 1-2, 4-5, 7, 9, 11, 13-17, and 19-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miura et al. (US 6,456,335) in view of Chiang et al. (US 6,192,081 B1).

Re claims 1, 9, 15, and 26, Miura teaches a multi-channel image encoding apparatus (fig. 31) for selectively receiving image signals transmitted through a plurality of input channels (1-1-1-n, 2, of figs. 5 and 20) and encoding the image signals (8 of fig. 31), comprising: a channel data processor (9 of fig. 31) comprising a frame buffer group (31 of fig. 31, see also 6 of figs. 5 or 20) including a plurality of frame buffers (fig. 12, Note #1(1) is considered as frame buffer for frame 1 of video signal #1; #1(1), #2(2), #3(4); and #4(5) are considered as frame buffers for video signals) for each input channel in order (#1-#4 of fig. 12) to receive a plurality of frame data ((1), (2), (4), and (5) of fig. 12) through the plurality of input channels (video signals #1-#4 of fig. 12) and to store the plurality of frame data (composed video signal memory 6 of fig. 5 or 20), the channel data processor (9 of fig. 31) selecting data transmitted to the frame buffer group (6 of fig. 5 or 8) to output the selected data, the channel data processor (9 of figs. 5, 20, 31) storing each unit of the frame data into the frame buffer group corresponding to each channel in accordance with a set-up input channel selection order (fig. 12, Note composed video signal); and an encoder (32-56 of fig. 31) for encoding image signals output from the channel data processor (9 and 31 of fig. 31) with a Moving Picture Experts Group method including selecting a prediction memory of channels corresponding to the unit frame data among the prediction memory with numbers corresponding to the number of the input channels (42 and 32 of fig. 31);

and encoding by using the data previously stored in the prediction memory (41 of fig. 31) and frame data of a current input channel (31 and 7 of fig. 31); said channel data processor comprising (9 of fig. 31): a first multi-switch unit (2 of fig. 5 and 20) for selectively contacting each of the input channels with the frame buffer group (fig. 12) corresponding to each of the input channels; and a second multi-switch unit (9, 10, and 31 of fig. 31, the picture composing apparatus (31 of fig. 31) transfers the video signal related to the composed picture to the encoding memory (7 of fig. 31), and carries out an encoding process in units of blocks made up of 8.times.8 pixels, for example, with respect to the video signal amounting to 1 composed picture and stored in the encoding memory; this disclosure would fairly suggest a switch for outputting the composed image data to the encoder) for selectively contacting the frame buffer group with the encoder and outputting data output from the frame buffer group to the encoder; a discrete cosine transformer (35 of fig. 31) for performing a discrete cosine transform with respect to the image signals inputted from the second multi-switch unit (31 of fig. 31); a quantizer (36 of fig. 31) for quantizing signals outputted from the discrete cosine transformer and outputting the quantized signals; a variable length encoder (36 and 37 of fig. 31, Note the data subjected to the series of encoding processes is stored in the transmission buffer (37 of fig. 31) at a rate depending on the amount of information generated by the encoding process, where encoder is in compliant MPEG 1, 2, and 4 standard, which means MPEG encoder would obviously have a variable length encoder) for performing a variable length encoding with respect to signals outputted from the quantizer, and outputting the encoded signals; and a parser (37 of fig. 31) for loading channel information about each frame to signals outputted from the variable length encoder, and outputting the signals.

The evidence of MPEG encoder is described in figure 1 of Chiang, wherein a variable length encoder (VLC or VLE, 180 of fig. 1) and buffer as parser (BUF, 190 of fig. 1). Therefore, it would have been obvious to one of ordinary skill in the art to incorporate the teaching elements in the MPEG encoder of Chiang to modify the encoder (fig. 31) of Miura for improving the efficiency of the prediction of sample values.

Re claims 2, Miura further teaches wherein the plurality of frame data stored in the frame buffer group is output to the encoder for each channel (31 of fig. 31, see also figure 12).

Re claims 4-5, 11, 19, Miura further teaches said first multi-switch unit (2 of fig. 5 or 20) storing each unit of the frame data into the frame buffer group (6 of fig. 5 or 20) corresponding to the input channels in accordance with a set-up input channel selection order (fig. 12), and the second multi-switch unit (9 and 31 of fig. 31) contacting with the frame buffer group in accordance with a set-up channel contact order (fig. 12) and outputting the plurality of frame data stored in the contacted frame buffer group for each of the input channels (Note the second multi-switch is reading out the composed stored image of the video signals #1-#4 of fig. 12 to the encoder (fig. 31) based on the encoding process); the multi-channel image encoding apparatus (fig. 31) said encoder comprising: an intra frame coder (33, 34, 35, 36, and 37) for intra coding (33 and 34 of fig. 31, Note selecting the inter or intra mode coding) with respect to inputted image signals (31 and 7 of fig. 31); an intra frame decoder (38, 39, and 40 of fig. 31) for decoding with respect to signals outputted from the intra frame coder (36 of fig. 31); an inverse quantizer (38 of fig. 31) for inversely quantizing the quantized signals; an inverse discrete cosine transformer (39 of fig. 31) for performing an inverse discrete cosine transform with respect to the inversely quantized signals; a prediction memory (41 of fig. 31; Note motion estimation would

obviously have a prediction memory that stored the decoded frame or picture); an adder (40 of fig. 31) for adding data outputted, from the prediction memory and the inversely discrete cosine transformed data, and outputting the added data to the prediction memory (41 of fig. 31); and a subtractor (32 of fig. 31) for subtracting data outputted from the prediction memory from signals inputted through the second multi-switch unit, and outputting the subtracted signal to the discrete cosine transformer.

Re claims 14 and 23-25, Miura teaches the MPEG encoder (fig. 31) that would obviously comprises a encoding method of a multi-channel image encoding apparatus (8 of fig. 5, detailed in figure 31) for selectively receiving image signals transmitted through a plurality of input channels (composed pictures from channels, 31 of fig. 31) and encoding the image signals (fig. 31, encoding the input signals form picture composing and encoding memory (31 and 7 of fig. 31), comprising the steps of: outputting unit frame data transmitted correspondence to a set-up input channel selection order for each channel to an encoder (9 and 10 of fig. 31); selecting a prediction memory of channels corresponding to the unit frame data among the prediction memory with numbers corresponding to the number of the input channels (32, 42, and 41 of fig. 31); and encoding by using the data previously stored in the prediction memory and frame data of a current input channel (32, 33, 34, and 36 of fig. 31, Note encoding the input signal based on the prediction (42 and 41 of fig. 31); wherein when the similarity greater than the reference value, then data gained by subtracting previous data from present data is encoded (32 of fig. 31); the similarity calculation being performed with a set-up macro block unit (41 of fig. 31).

Re claims 7, 13, Miura further teaches a channel selection unit (10 of fig. 31) including a key for setting up a channel select pattern (transmission rate, overflow or underflow buffer, or

request from a user) with regard to the plurality of input channels (composed picture of fig. 12); and a channel controller (9 of fig. 31) for controlling the first multi-switch unit and the second multi-switch unit (fig. 5, the controller controls the first switch (2 of fig. 5) and second switch (8 of fig. 5, later 31 of fig. 31) in accordance with the channel select pattern set up by the channel selection unit.

Re claims 16 and 17, Miura further teaches wherein the plurality of encoding modes comprises: a first mode for encoding the present frame data with an intra coding method (33 of fig. 31, selecting 1); and a second mode (33 of fig. 31, selecting 2) for encoding data gained by subtracting the previous frame data from the present frame data; an encode unit for encoding (36 and 37 of fig. 31); and a similarity calculation unit (41 and 42 of fig. 31) for determining a corresponding encoding mode by calculating the similarity, controlling (10 of fig. 31) the encode unit to perform the determined encoding mode, and outputting determined encoding mode information.

Re claims 20 and 21, Miura further teaches comprised of the said similarity calculation unit calculating a similarity by comparing previous screen data stored in the selected frame memory by a frame memory selection unit and frame data of a selected channel by the second multi-switch unit with a set-up macro block unit (41 of fig. 31, Note the motion estimation unit is well known in MPEG standard for comparing the similarity of the selected frame as previous frame from a frame buffer and a current frame from the input) , and determining an encoding mode with the macro block unit (inter and intra frames selection, 33 and 34 of fig. 31); said similarity calculation unit determining a calculated similarity as the first mode when the calculated similarity is greater than a set-up reference value (Intra mode coding, I frame is

changed, 33 and 34 of fig. 31), and as the second mode when the calculated similarity is less than set-up reference value (Inter mode coding, 33 and 34 of fig. 31).

Conclusion

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tung Vo whose telephone number is 571-272-7340. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mehrdad Dastouri can be reached on 571-272-7418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Tung Vo
Primary Examiner
Art Unit 2621